

BRIEF CONTENTS

CHAPTER 1

Introduction: An Overview of AIDS 1

CHAPTER 2

Concepts of Infectious Disease and a History of Epidemics 5

CHAPTER 3

The Immune System 17

CHAPTER 4

Virology and HIV 41

CHAPTER 5

Clinical Manifestations of AIDS 67

CHAPTER 6

Epidemiology and AIDS 93

CHAPTER 7

Modes of HIV Transmission and Personal Risk Factors 117

CHAPTER 8

Individual Assessments of HIV Risk 131

CHAPTER 9

Prevention of AIDS 151

CHAPTER 10

Living with AIDS: Human Dimensions 169

CHAPTER 11

Living with AIDS: Societal Dimensions 187

CHAPTER 12

Future Directions in Combating AIDS 199

Glossary 217

Appendix A: Reference Resources 227

Appendix B: Idea Exchange Groups: A Way to Catalyze Discussion of AIDS-Related Topics 229

Index 237

CONTENTS

Preface	xiii
Acknowledgments	xiv
Authors	xv

CHAPTER 1

Introduction: An Overview of AIDS	1
AIDS in Brief	1
The AIDS Epidemic	2

CHAPTER 2

Concepts of Infectious Disease and a History of Epidemics	5
Factors That Affect the Spread of Epidemics	6
Host and Virus Populations	6
The Transmission Rate	7
Population Densities and Infections	8
Chronic Infections	9
Controlling Infectious Diseases	10
A History of Epidemics	11
The Old World	11
The New World	12
Modern Concepts of Infectious Disease and Koch's Postulates	13
Epidemics in Modern Times	14
Syphilis: The Social Problems with a Sexually Transmitted Disease	15

CHAPTER 3

The Immune System	17
Blood	17
Cells of the Blood	20
The Lymphatic Circulation	24
B-Cells and Humoral Immunity: The Generation of Antibodies	26
Antibodies	26
How Does the Immune System Respond to New Antigens?	27
Vaccines	33
Tolerance	33
A Summary of the Humoral Immune System	33
T-Cells and Cell-Mediated Immunity	34
T _{killer} Lymphocytes	34
T _{helper} Lymphocytes	35
T-Lymphocyte Recognition of Antigen-Containing Cells	37

CHAPTER 4

Virology and HIV	41
A General Introduction to Viruses	41
What Are Viruses?	42
How Does a Virus Infect a Host?	43
A Typical Virus Infection Cycle	45
How Do We Treat Viral Infections?	47
The Life Cycle of a Retrovirus	48
The AIDS Virus: HIV	51
Features of HIV	52
The Effects of HIV Infection in Individuals	55
The HIV Antibody Test	58
Potential Problems with the HIV Antibody Test	60
Testing for the Level of Circulating HIV	61
How Does HIV Evade the Immune System?	61
Azidothymidine (AZT), an Effective Therapeutic Agent in AIDS	63
Limitations of AZT	64
Protease Inhibitors, Another Class of Therapeutic Agents Against HIV	65
Where Did HIV Come From?	66

CHAPTER 5

Clinical Manifestations of AIDS	67
Exposure, Infection, and Disease	68
Exposure Versus Infection	68
Infection Versus Disease	69
Primary Infection and the Asymptomatic Period	69
Mononucleosis-Like Illness	69
Brain Infection (Encephalopathy)	71
The Asymptomatic Period	71
Initial Disease Symptoms	72
Wasting Syndrome	72
Lymphadenopathy Syndrome	72
Neurological Disease	73
Damage to the Immune System and Full-Blown AIDS	73
Early Immune Failure	74
AIDS	76
High Turnover of T_{helper} Cells in AIDS Patients	84
Antiviral Drug Treatments in AIDS	84
AZT and Other Nucleoside Analogs	84
Development of Drug-Resistant HIV	85
AZT Treatment of Pregnant Women	87
Non-Nucleoside Inhibitors of Reverse Transcriptase	87

Protease Inhibitors	87
Fusion Inhibitors	88
Combination Therapies	88
Limitations and Uncertainties in the Triple Combination (HAART) Therapies	89

CHAPTER 6

Epidemiology and AIDS	93
An Overview of Epidemiology and AIDS	94
Basic Concepts in Epidemiology	95
Descriptive Studies	96
Analytical Studies	98
Correlations	100
Criteria for a Causal Relationship	100
Epidemiology and AIDS in the United States	101
The Current Picture of AIDS in the United States	101
Epidemiology and Modes of HIV Transmission	104
Likelihood of Progression to AIDS	107
The Effectiveness of AZT	108
The Changing Face of AIDS	108
AIDS Around the World	110
AIDS in Africa	111
AIDS in Asia	113
New Areas of Rapid Spread	114
HIV Subgroups and Clades	115

CHAPTER 7

Modes of HIV Transmission and Personal Risk Factors	117
Biological Bases of HIV Transmission	118
Sources of Infectious HIV	119
Stability of HIV	120
Targets for HIV Infection	120
Modes of HIV Transmission	121
Activities Not Associated with HIV Transmission: Casual Contact	121
Activities Associated with HIV Transmission: Birth, Blood, and Sex	122

CHAPTER 8

Individual Assessments of HIV Risk	131
Introduction to Individual Decision Making and Action	131
Risk Assessment	132
Normative Model	134
Subjective Probability Model	135
HIV Testing and Risk Assessment	143
Nature and Accuracy of the HIV Test	143
HIV Counseling as Part of the HIV Test	145

Confidentiality Versus Anonymity of Test Results 147
Notes 149

CHAPTER 9

Prevention of AIDS 151
Disease Prevention and Health Promotion 152
Models of Health Behavior Change 152
 Health Belief Model 153
 Health Decision Model 154
 Precaution-Adoption Process Model 155
Principles of Health Behavior Change 156
 The Cognitive Principle 156
 The Emotional Principle 156
 The Behavioral Principle 157
 The Interpersonal Principle 157
 The Social Ecological Principle 158
 The Structural Principle 159
 The Scientific Principle 161
Examples of HIV and AIDS Prevention Programs 162
 AIDS Prevention Among Young Gay and Bisexual Men 162
 AIDS Prevention Among Mexican Migrant Farm Workers 163
 Notes 167

CHAPTER 10

Living with AIDS: Human Dimensions 169
Theoretical Perspectives from Social Psychology 170
 Role Theories 170
 Cognitive Theories 172
Human Dimensions of HIV and AIDS 175
 Confronting the News of Infection 175
 Accepting the Reality of Infection 178
 Opportunities and Challenges of Drug Therapies 184
 Notes 185

CHAPTER 11

Living with AIDS: Societal Dimensions 187
Theoretical Concepts 188
 Prejudice 188
 Discrimination 190
Societal Dimensions of HIV/AIDS 191
 Needle Exchange for Injection Drug Users 192
 HIV Prevention for Teens 194
 Healthcare Practices 195

CHAPTER 12

Future Directions in Combating AIDS	199
Future Directions for Biomedical Efforts	199
Prevention of Infection	199
Treatment of Infected Individuals	202
Future Directions for Social Efforts	209
Education	209
Research	212
A Final Note of Optimism: Time is on Our Side	213
Glossary	217
Appendix A: Reference Resources	227
Appendix B: Idea Exchange Groups: A Way to Catalyze Discussion of AIDS-Related Topics	229
Index	237